

CLAIMS

We claim:

1. A process for introducing defects into a metal oxide, said process comprising the steps of:
 applying a gas to a sufficient amount of a metal oxide sample to increase the specific
 energy;
 heating said metal oxide sample; and
 cooling said metal oxide sample.

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2. The process as in claim 1, further comprising the step of:
 maintaining said heating step at a temperature of from about 300 to about 600 °C.
3. The process as in claim 2, wherein said heating step is maintained from about 6 to about 72
 hours.
4. The process as in claim 1, wherein said gas is applied to said metal oxide sample at a linear
 flow rate of at least about 50 cm.
 ¹¹²
5. The process as in claim 1, wherein said heating step is from about 2 to about 20 °C/min up to
 about 460 °C.

6. The process as in claim 5, further comprising the step of:

maintaining said temperature of about 460 °C for 24 hours.

7. The process as in claim 1, wherein said cooling is from about 2 to about 20 °C/min until ambient air temperature is achieved.

8. The process as in claim 1, wherein said gas is a mixture of O₂ and H₂O_(g).

9. The process as in claim 1, wherein said metal oxide sample is V₂O₅.

10. The process as in claim 1, wherein said sufficient amount comprises metal oxide comprising a surface area of about 1- 10 square meters.

11. A process for preparing a metal oxide for a battery cathode with increased capacity, said process comprising:

applying a mixture of O₂ and H₂O gas to a sufficient amount of a V₂O₅ metal oxide sample at a linear flow rate of about 50 - 350 cm;

heating said metal oxide sample at a temperature of from about 300 to about 600 °C for a time period of from about 6 to about 72 hours; and

cooling said metal oxide sample.

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Inventors: Lyons et al.

PATENT APPLICATION

12. The product of the process as in claim 11.
13. Vanadium oxide with increased ionic defect concentration.
14. A metal oxide with increased ionic defect concentration.
15. A metal oxide with increased lithium ion capacity.
16. A metal oxide with increased specific capacity.

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